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1 7. The method as recited in claim 1 wherein priority is assigned to at least
2 each requester making a request according to requester priority for each arbitration
3 cycle.

1 8. The method as recited in claim 1 wherein priority is assigned to at least
2 each requested resource according to resource priority for each arbitration cycle.

1 9. The method as recited in claim 1 wherein assigning priorities further
2 comprises:
3 combining resource priority and requester priority to generate an assigned
4 priority for each combined requester and resource priority.

1 10. The method as recited in claim 1 wherein the requesters are input ports
2 of a network switch and the resources are output ports of the network switch, multiple
3 ones of the output ports being accessible to more than one of the input ports.

1 11. The method as recited in claim 1 wherein the requesters are processors
2 of a multi-processor system and the resources are memories coupled to the processors,
3 each of the memories being accessible to more than one of the processors.

1 12. The method as recited in claim 1 further comprising recalculating
2 priorities after each time a resource is allocated.

1 13. A method for allocating multiple resources to multiple requesters,
2 comprising:
3 receiving requests for the multiple resources from the multiple requesters; and
4 allocating respective resources to respective requesters according to priorities
5 determined by at least one of a number of requests made by each
6 requester and a number of requests directed to each of the resources.

1 14. The method as recited in claim 13 further comprising allocating the
2 respective resources to the respective requesters according to a starvation avoidance
3 mechanism.

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1 15. An arbitration apparatus for arbitrating requests from a plurality of
2 requesters for a plurality of resources, comprising:
3 means for receiving requests for resources from the requesters; and
4 means for allocating requests according to at least one of requester priority and
5 resource priority.

1 16. The arbitration apparatus as recited in claim 15 further comprising:
2 means for determining requester priority for each respective requester
3 according to a number of requests made by the respective requesters,
4 the requester priority being inversely related to the number of requests.

1 17. The arbitration apparatus as recited in claim 15 further comprising:
2 means for determining resource priority for respective resources according to a
3 number of requests made for the respective resources, the respective
4 resource priorities being inversely related to the number of requests
5 made for the respective resource.

1 18. The arbitration apparatus as recited in claim 15 further comprising
2 means for preventing starvation for requests.

1 19. An apparatus comprising:
2 a transport mechanism attached to a plurality of resources and a plurality of
3 requesters;
4 an arbiter coupled to receive a plurality of requests from the requesters, each
5 of the requests at least one of the resources, the arbiter allocating
6 resources to requesters according to at least one of a requester priority
7 and a resource priority, the requester priority and the resource priority
8 being inversely related to, respectively, a number of requests for
9 resources made by respective requesters and a number of requests
10 directed to respective resources.

1 20. The apparatus as recited in claim 19 wherein the arbiter further
2 includes a round robin mechanism to allocate resources to requesters.

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1 21. The apparatus as recited in claim 19 wherein the requesters are
2 processors, the resources are memories, each of the memories being coupled to
3 multiple ones of the processors and the transport mechanism is a plurality of buses
4 coupling the processors to the memories.

1 22. The apparatus as recited in claim 19 wherein the requesters are input
2 and output nodes of a network and the transport mechanism is a switch.

1 23. A method of sharing multiple resources among multiple requesters
2 using an arbiter, comprising:
3 receiving requests for the multiple resources from the multiple requesters; and
4 allocating resources among the requesters as a function of a number of
5 requests made.

1 24. The method as recited in claim 23 wherein the function of the number
2 of requests utilizes how many requests are made by each requester.

1 25. The method as recited in claim 23 wherein the function of the number
2 of requests utilizes how many requests made for each resource.

1 26. The method as recited in claim 23 wherein the function of the number
2 of requests utilizes a combination of how many requests made for each resource and
3 how many requests are made by each requester.

1 27. A computer program product encoded in at least one computer
2 readable medium to implement an arbitration mechanism to allocate multiple
3 resources among multiple requesters, the computer program product comprising:
4 code executable to receive requests for the multiple resources from the
5 multiple requesters; and
6 code executable to allocate respective resources to respective requesters
7 according to priorities determined by at least one of a number of
8 requests made by each requester and a number of requests directed to
9 each of the resources.

1 29. The computer program product as recited in claim 27,
2 wherein the at least one computer readable medium is selected from the set of
3 a disk, tape or other magnetic, optical, or electronic storage medium
4 and a network, wireline, wireless or other communications medium.